ERGUS
INVERTERS

ADV SERIES

INVERT 120/40 ADV
INVERT 130/40 ADV
INVERT 130/60 ADV
INVERT 140/35 ADV
INVERT 140/50 ADV
INVERT 160/50 ADV
INVERT 140/50 ADV G-PROT
INVERT 160/50 ADV G-PROT

USER MANUAL

MANU.115.M.ADV.00

TEC.LA S.r.l. thanks you for having chosen its welding machine, built with the principles of safety and reliability.
The quality materials used in building the machines ensure total reliability and ease of maintenance.

We recommend reading the manual before connecting the system to the mains.

DECLARATION OF CE CONFORMITY

MANUFACTURER

TEC.LA. S.r.l.
Via Castel Morrone n. 15/c
16161 GENOVA – ITALIA

DECLARES

UNDER ITS SOLE RESPONSIBILITY THAT THE PRODUCTS LISTED BELOW, HAVING THE TRADE MARK:

MODEL: **120/40 ADV - 130/40 ADV - 130/60 ADV - 140/35 ADV**
140/50 ADV - 160/50 ADV - 140/50 ADV G-PROT - 160/50 ADV G-PROT
SERIAL NUMBER:

REFERRING TO DELIVERIES STARTING JANUARY THE 1ST 2005, IS

IN CONFORMITY

WITH THE PROTECTION REQUIREMENTS SET BY DIRECTIVES **89/336 EEC, 92/31 EEC** AND **93/68 EEC** REGARDING **ELECTRO MAGNETIC COMPATIBILITY** (EMC). IN PARTICULAR IT CONFORMS WITH THE TECHNICAL REQUIREMENTS OF THE **EN 50199, EN 60974-1** STANDARDS AND IS TO BE USED IN ALL INDUSTRIAL BUILDINGS, NOT FOR HOUSEHOLD USE.

GENOVA, JANUARY THE 1ST, 2005

MANAGING DIRECTOR
CARLO CURLETTO

Valued Customer,

Hoping you will find our product to your satisfaction, we welcome you to our family, informing you that the ERGUS marked machines have been ISO 9000:2001 certified, thus guaranteeing greater product reliability and quality.

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GENERAL SAFETY INFORMATION

Electric shock

ELECTRIC SHOCK CAN KILL.

- Do not touch the parts under high voltage;
- Disconnect the power supply from mains before any intervention;
- Operator must be insulated from the weld piece and from the ground, using insulated gloves and clothing;
- Do not work with damaged or poorly connected cables or with slack cable clamps;
- Keep work clothing and your body, dry;
- Do not work in moist or wet areas;
- Do not lean against the weld pieces;
- Protect the power source with a suitable circuit breaker, placed near the welder if possible;
- Do not use the machine if any of its protection parts have been removed;
- Make sure that the mains in use is earthed.

Explosions

- Do not weld above or near containers under high pressure;
- Do not weld recipients that contain fuel or inflammables;
- Do not weld in areas containing explosive dusts, gases or vapours;
- Always use a pressure gauge to connect the machine gas hose to the bottle;
- Do not use damaged or leaking bottles;
- Do not use bottles that do not show what kind of gas they contain;
- Do not expose bottles to sources of excessive heat;
- Never mix the gas inside bottles;
- Have always refilled bottles by specialized companies;
- Avoid accidental contact between bottles and the electrode or other parts under voltage;
- Replace gas hoses that show damage;
- Keep pressure reducer efficient;
- Use only pressure reducers manufactured for the specific gas.

Fire

- Avoid flames being generated by sparks, slag and incandescent materials;
- Make sure that fire extinguishing devices are available near the work area;
- Remove inflammable and combustible materials from the area.

Burns

- Protect the body from burns and ultraviolet radiations by wearing protective flameproof clothing (gloves – headwear – shoes – helmets, etc.);
- Wear a welding helmet;
- Keep the electrode or torch tip away from your body and other people's bodies;
- Make sure that there is first aid equipment near the work area;
- Do not wear contact lenses, the intense heat of the arc could glue them to the cornea;
- Replace mask glass if it is damaged or not suited to the specific welding job;
- Wait for the welded parts to cool completely before touching them with your hands.

Fumes

Welding produces fumes and harmful metallic dusts, therefore;

- If working in closed areas, use exhaust fans;
- Clean the weld piece if solvents or other materials that can release toxic gases are present on its surface;
- Do not weld metals covered with or containing lead, cadmium, graphite, zinc, chrome, mercury, if there is not an adequate exhaust fan;
- **WARNING: do not use oxygen for ventilation!!!**

Radiation

The welding arc produces radiation that can damage eyes and burn the skin. The welding arc is considered dangerous up to a distance of 15m (50 ft). Use suitable protection.

Noise

The welding arc respects current legislation on noise levels (not exceeding 80db); Protective ear plugs or muffs must be worn to avoid damage when working overhead or in small areas.

Electromagnetic disturbance

The power source respects legislation regarding electromagnetic disturbances and is suitable for work in industrial surroundings.
However, it is necessary to remember and take necessary provisions if there are disturbances to:

- Data transmission systems;
- Communication devices;
- Switch board controls;
- Safety equipment;
- Calibration and measurement instruments.

Pacemaker wearers

The magnetic fields coming from high votage or frequency can interfere with pacemakers.
Pacemaker wearers must consult their doctor before using this type of equipment or working in the area where it is present.

Moving parts

Keep all protective doors and coverings in place;
Keep hands, hair and clothing away from moving parts (fan, rotator, wire feeder for MIG machines).

DANGER SIGNS

EXPLOSIVE MATERIAL

INFLAMMABLE MATERIAL

GENERIC DANGER

DANGEROUS ELECTRICAL TENSION

POISONOUS SUBSTANCES

BLINDING

ACCIDENT PREVENTION SIGNS

SAFETY FOOTWEAR REQUIRED

BODY PROTECTION REQUIRED

PROTECTIVE GLOVES REQUIRED

EYE PROTECTION REQUIRED

HEARING PROTECTION REQUIRED

EXTINGUISHER

FIRST AID

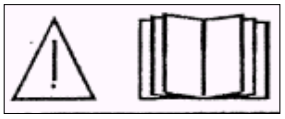
DESCRIPTION OF POWER SOURCE

ADV series welding systems are designed for welding coated electrodes and for TIG welding with SCRATCH arc ignition; their basic parts are:

1. **Control electronics**
2. **Power electronics**

Reduced size and weight make these welders ideal for operators having frequent moving jobs.
The inverter frequency eliminates the characteristic noise of old generation electronic power sources. The welding bead is more effectively controlled due to the progress of electronic research.
The quality of materials used for manufacturing the ERGUS machines guarantees high performance, long life and low maintenance.

BEFORE PLUGING AND USE, READ THIS INSTRUCTION MANUAL CAREFULLY.



By following the instructions you can avoid incorrect machine installation.
Damage due to incorrect use invalidates the guarantee.

FOR SPECIAL MAINTENANCE, CONTACT THE DEALER. REPAIRS MADE BY UNAUTHORISED SERVICE CENTRES INVALIDATE THE GUARANTEE.

Welding power sources are designed for professional use and must be used exclusively by qualified personnel.
This equipment can work under particularly heavy duty and with temperatures between –10°C (14°F) and +40°C (104°F).

1. Placing the equipment

Avoid placing the equipment in areas that limit the air flow from the fan and from the ventilation grids (do not cover the power source).
Make sure that the environment temperature does not exceed of 40°C (104°F), that there is no wet air containing dusts, acids, salts, concentrations of ferrous or metallic dust.
Check that the mains voltage is the same as the power source voltage.
Make sure that the power available from the mains is adequate for the power required by the generator (see technical data).
Make sure that the working conditions conform with the IP 21 S protection degree.
Casings ensure protection of the electrical components against external agents and against direct contact. They have various degrees of protection against **solids** and **water**, depending on the conditions they are used in.
The degree of protection is shown by the letters **IP** followed by two digits: the first digit shows the degree of protection against solid objects and the second the degree of protection against water.

I Digit	Description	II Digit	Description	Additional field	Description
2	Protected against solid objects larger than 12 mm (for example: a finger).	1	Protected against drops of water falling vertically.	S	Equipment **not** in operation.

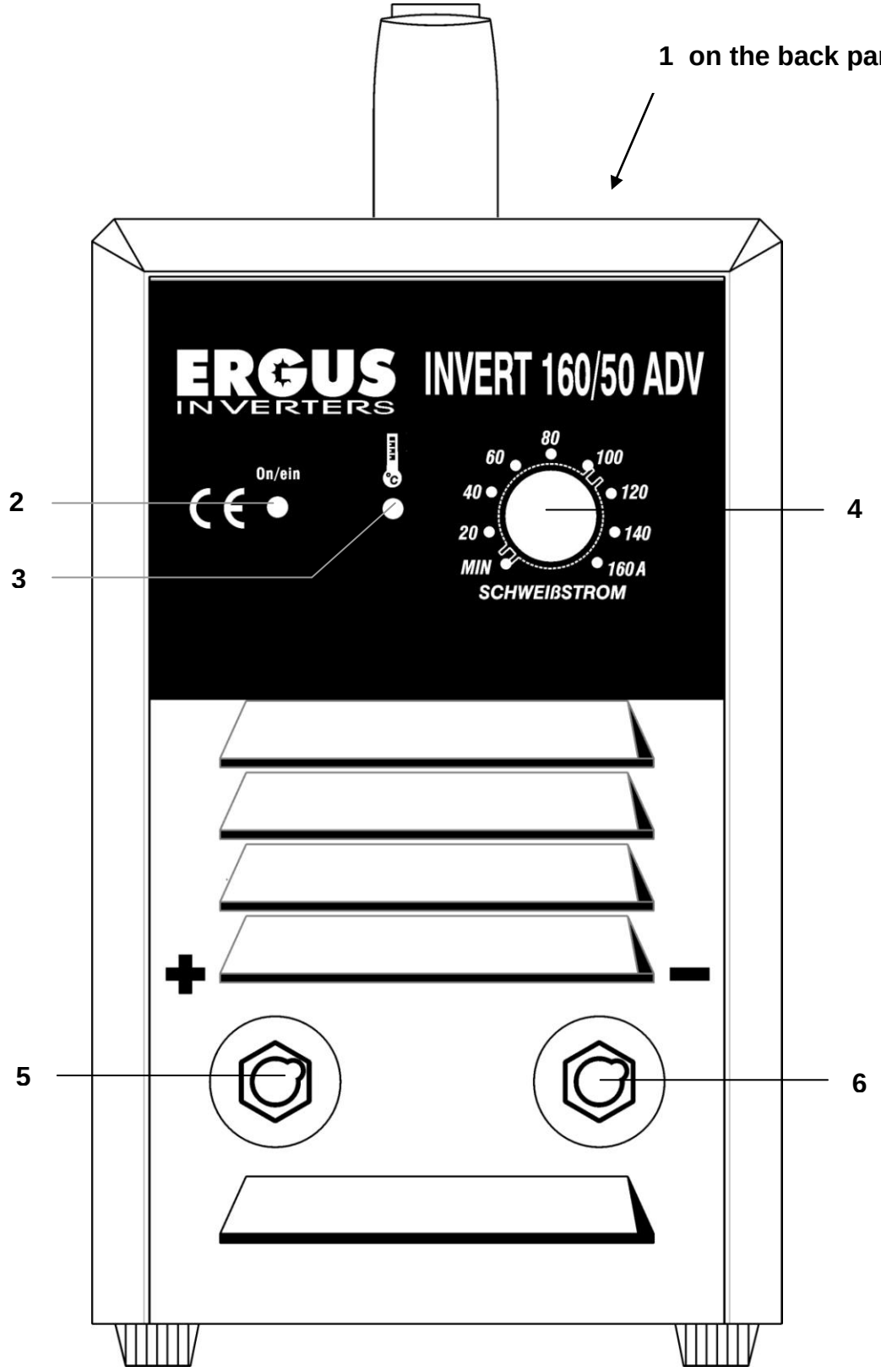
2. Receipt of materials

The package contains:

- 1 power source;
- 1 user manual;
- 1 belt.

Make sure that all the materials listed above are in the package. If anything is missing, contact your dealer.
Make sure that the generator has not been damaged during transport. If damage is found, promptly contact your dealer.

3. Front panel controls



INVERT 120/40 ADV – 130/40 ADV - 130/60 ADV – 140/35 ADV -140/50 ADV – 160/50 ADV

1. "ON-OFF" SWITCH
2. "ON" LED INDICATOR
3. OVERHEATING LED
4. OUTPUT CURRENT KNOB
5. POSITIVE CONNECTOR
6. NEGATIVE CONNECTOR

INSTALLATION AND USE

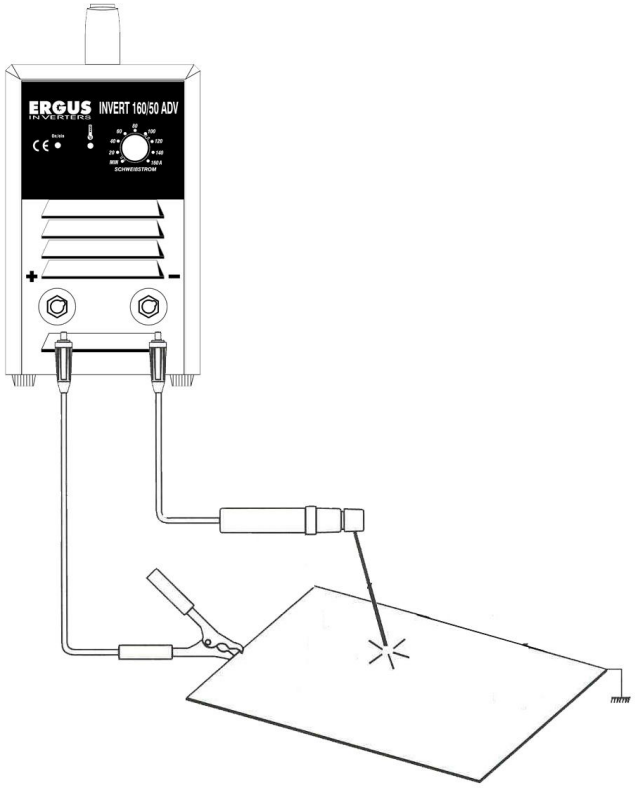
Machine installation must be done by qualified personnel. All connections must be done in conformity with current specifications and with respect for industrial accident prevention regulations.
Before connecting the power source to the mains, check that it is between 210 V and 250 V. **Mains receptacle must be earthed.** Only the G-PROT models can be connected to the power generator, since they already have a device that protects them from hight voltage peaks.

Tables of lengths and sections
Mains used must always supply the required power.
In some applications extension cables are necessary to reach the work area. To ensure maximum power source output, abide by the following tables showing the section of the extention cables vs. length.

WELDING STICK OF 2,50 MM (3/32") (100A)		WELDING STICK OF 3,25 MM(1/8") (140A-160A)	
20 mt	2,5 mmq	10 mt	2,5 mmq
30 mt	4 mmq	20 mt	4 mmq
50 mt	6 mmq	30 mt	6 mmq

NOTE: For different lengths, use a proportional section size.

INSTALLATION OF ELECTRODE MACHINE



All welding parameter controls are placed on the welding machine front panel.

- Plug the power cord into a 230V single phase mains socket, making sure that it is earthed.

- **Ref. 1** Switch-on for the inverter ignition.
- **Ref. 2** "ON" LED indicator.
- **Ref. 3** LED indicating inverter blockage due to overheating.
- **Ref. 4** Power knob for welding current output.

  Electrodes 1,60 mm (1/16"): minimum current 30A maximum current 50A
  Electrodes 2,00 mm (5/64"): minimum current 40A maximum current 70A
  Electrodes 2,50 mm (3/32"): minimum current 70A maximum current 110A
  Electrodes 3,25 mm (1/8"): minimum current 110A maximum current 140A
  Electrodes 4,00 mm (5/32"): minimum current 140A maximum current 180A

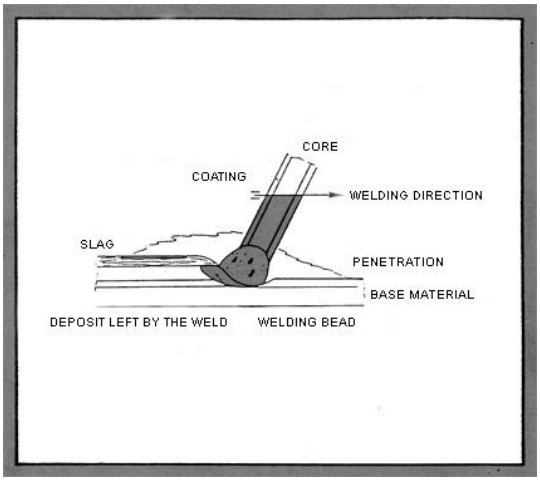
- **Ref. 5 Ref. 6** Connect positive (**+**) and negative (**-**) connectors to the earth cable and the electrode holder. Rutile electrodes need the electrode holder be connected to negative pole (**-**) while basic electrodes need the electrode holder connected to positive pole (**+**). In any case, for each type of electrode consult the instructions printed on the electrode box.

- **The HOT START function is automatic.**

Insert the un-coated end of the electrode into the holder. Connect the earth terminal to the weld piece. Scratch the electrode on the piece. To end welding, move the electrode away and the arc will extinguish.

1. Electrode welding

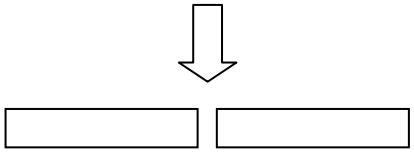
Arc welding with coated electrodes is a fusion procedure that uses an electric arc as a source of heat. This is formed between the extremities of a coated electrode and a base material.
The heat developed by the arc melts the base material, the rod and part of the coating. The remaining part of it burns into smoke, creating an atmosphere that protects the welding bead from the oxidising action of the air.
The part of the coating that enters the weldong bath separates from the metal, moving to the surface where it forms the slag which contributes in protecting against air.
The procedure can be done in all welding positions.



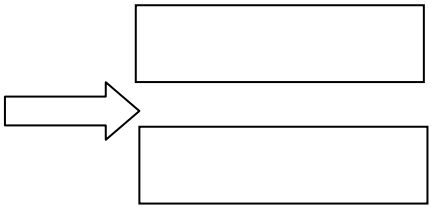
WELDING POSITIONS

There are four basic positions:

- **Surface:** the electrode is applied from above and the parts to weld are in a horizontal position.

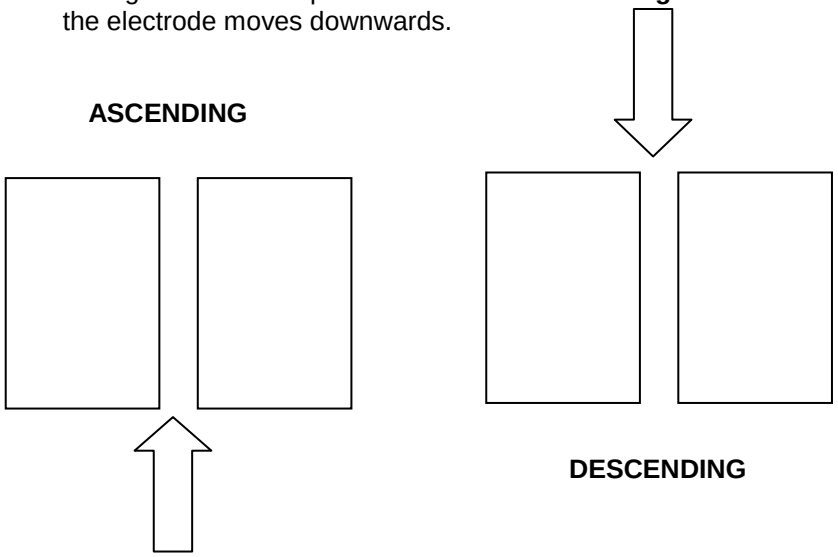


- **Frontal:** the electrode is applied horizontally with the parts to weld in a vertical position.



- **Vertical:** the electrode acts vertically and the parts to weld are in the same position. They are distinguished in two positions: **Vertical ascending:** the electrode moves upwards; **Vertical descending:** the electrode moves downwards.

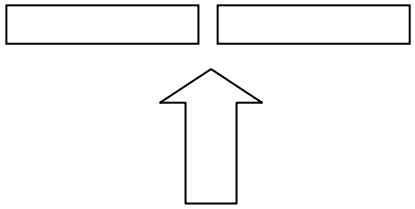
ASCENDING



DESCENDING

NB: Descending welding needs a quick movement, while ascending welding needs a slow movement which heats the material to be welded.

- **Overhead:** the electrode works upwards, while the parts to weld are in a horizontal position.

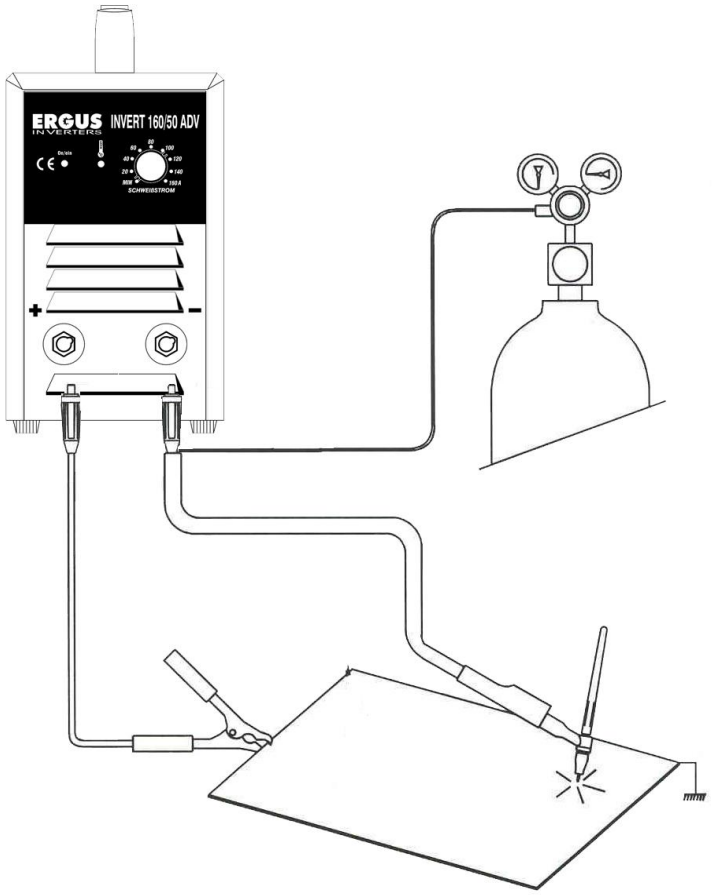


FOR OPTIMAL WELDING ON MATERIALS OF CONSISTENT THICKNESS, THE EDGES TO BE JOINED SHOULD BE PREPARED FOR WELDING BEFORE PROCEEDING.

2. Electrode welding defects–troubleshooting

DEFECT	POSSIBLE CAUSES	REMEDIES
1. Air bubbles in the bead (porosity).	A. Wet electrodes. B. Welding current to high. C. Greasy or painted Surfaces	A. Dry electrodes before use. B. Reduce welding current. C. Clean joints before welding them.
2. Visible cracks in the bead immediately after solidification.	A. Joints too rigid. B. Welding throat too thin. C. Cooling too quick.	A. Eliminate tension problems due to the shape of joints. B. Reduce welding speed to allow for a thicker deposit. C. Pre-heat the piece and cool it more slowly.
3. Fissure due to slight filling of the split.	A. Welding current too low. B. Electrode too big for the joint. C. Insufficient split. D. Incorrect welding sequence.	A. Increase welding current. B. Use electrodes of a smaller diameter. C. Enlarge split. D. Place the pieces in a correct sequence.
4. Portions of the welded piece not melted with the sheet metal or with the joint.	A. Electrodes too thin for the piece to be welded. B. Welding current too low. C. Electrode used with incorrect slope. D. Weldingf speed too fast. E. Slag or dirt on the surface of the piece.	A. Use electrodes of a larger diameter and pre-heat the piece. B. Increase welding current. C. Correct the welding angle towards the base plate. D. Reduce the welding speed. E. Clean the surface before welding.
5. Non metallic material trapped in the weld bead (slag included).	A. Particles trapped in the lower layers of the preceding passages. B. Joint prepared too tight. C. An irregular deposit helps the slag to stay trapped. D. Slight penetration with slag trapped under the welding bath. E. Rust or chips prevent total melting. F. Wrong electrode for the welding position.	A. In situations of slight base welding, clean slag and pass on the base again with an electrode of a smaller diameter. B. Guarantee enough space for slag cleaning. C. If necessary, grind the slight or the irregular part. D. Remove all slag from corners. Use smaller electrodes with higher current for suitable penetration. E. Clean the joint before welding. F. Use electrodes suited to the welding position, otherwise it will be difficult to remove the slag.

INSTALLATION OF MACHINE IN TIG



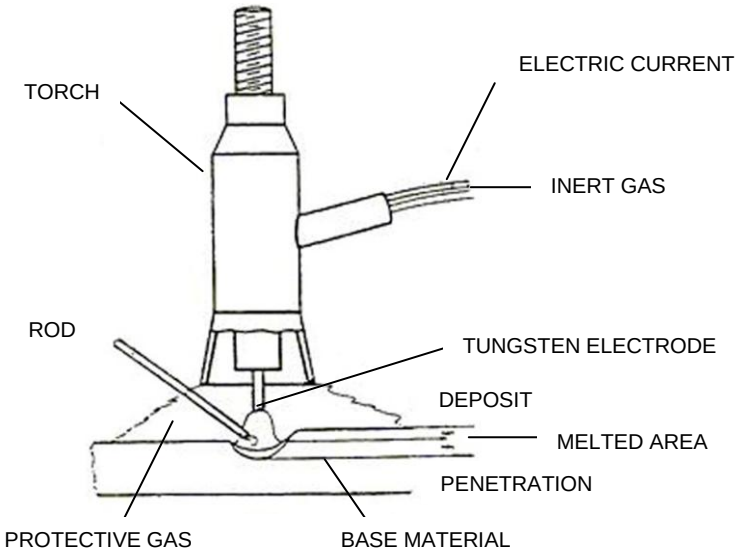
TIG DC WELDING (CARBON STEEL – STAINLESS STEEL – COPPER)

- Connect the mains power cable to a 230V single phase line, making sure that the socket is earthed.
- Place the gas bottle in a safe place and make sure that it is well secured.
- Connect the TIG torch gas hose to the pressure gauge following the manufacturer's instructions which are included with the gauge. Pure ARGON gas recommended 4-8 lt./min. (1-2 gallon/min).

- **Ref. 4** Power knob with potentiometer for welding current output.
- **Ref. 5** Positive connector (+)for the earth cable.
- **Ref. 6** Negative connector (-) for the TIG torch power cable.
- Open the gas valve on the TIG torch handle and ignite the welding arc by placing the electrode tip on the piece to be welded, then lift it slowly to a distance of 3-4 mm. (0.16 in.); arc extinguishing by completion of welding is done by electrode removal from the welding piece; let the gas outflow for a few seconds (6-8 seconds) to avoid electrode oxidation and help electrode cooling, then close the gas valve.

1.TIG welding

TIG welding is a fusion procedure that uses as a source of heat an electric arc created between an infusible tungsten electrode and the base material to be welded. For TIG welding an inert gas must be used (ARGON) which protects the welding bead. If filling material is used, it is made up of rods suitable to the material to be welded (steel, steinless steel, copper, etc).



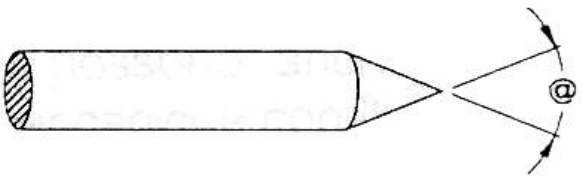
In TIG mode, welding it is possible in all positions: flat, angle, on the edge, vertical and overhead. Furthermore, with respect to other types of welding, the welded joint has greater mechanical resistance, greater corrosion resistance and limited heating in the welded area which limits distortion. Welding can be done even without weld material, guaranteeing a smooth, shiny weld with no impurities or slag.

Electrode selection and preparation

WELDING CURRENT AND RELATIVE ELECTRODE DIAMETER

∅ electrode (mm)	Range of welding current setting (A)
1.0 (.04 in) 1.6 (.063 in) 2.4 (.094 in)	15-75 60-150 130-240

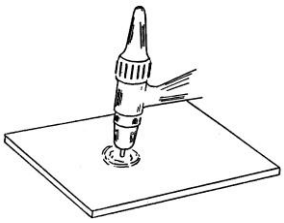
The electrode should be pointed according to the welding current.



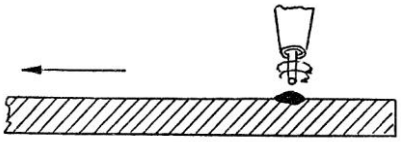
Angle @ [°]	Range of current [A]
30 60-90 90-120 120	0-30 30-120 120-250 >250

Welding method

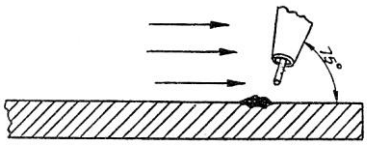
Pre-heat the starting point in the work piece, by moving the torch in small circles until the weld bead is formed.



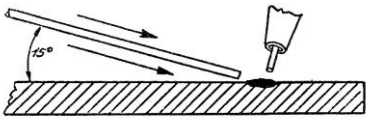
The electrode must be held at about 6 mm (.23 in) from the piece; as soon as the melted bead forms, proceed slowly at constant speed in order to make a melted seam uniform in penetration and width.



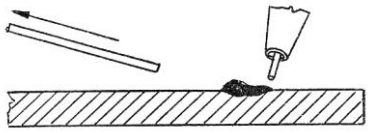
If filling material is used, keep the rod sloped and about 20 mm (.79 in) from the piece.



When the weld seam becomes fluid, move the torch back and add material, touching the rod to the bead.



Pull the rod away and position the torch back near the weld pool.



Repeat this operation quickly and constantly so that the weld remains homogenous.

TIG WELDING PARAMETERS FOR STEEL

Thickness of material	Direct current for iron (A)	Direct current for stainless steel (A)	Tungsten electrode diameter	Rod diameter (if required)	Argon gas flow (lt/min)	Type of joint
1.0mm (.04 in)	35-45 40-50	20-30 25-35	1.0mm (.04 in)	1.6mm (.06 in)	5-7 (1.3-1.8gal/min)	Corner joint / Surface joint
1.2mm (.047 in)	45-55 50-60	30-45 35-50	1.0mm (.04 in)	1.6mm (.06 in)	5-7 (1.3-1.8gal/min)	Corner joint / Surface joint
1.6mm (.06 in)	60-70 70-90	40-60 50-70	1.6mm (.06 in)	1.6mm (.06 in)	7 (1.8 gal/min)	Corner joint / Surface joint
3.2mm (.13 in)	80-100 90-115	65-85 90-110	1.6mm (.06 in)	2.4mm (.09 in)	7 (1.8 gal/min)	Corner joint / Surface joint
4.8mm (.19 in)	115-135 140-165	100-125 125-150	2.4mm (.09 in)	3.2mm (.13 in)	10 (2.6 gal/min)	Corner joint / Surface joint
6.4mm (.25 in)	160-175 170-200	135-160 160-180	3.2mm (.13 in)	4.0mm (.16 in)	10 (2.6 gal/min)	Corner joint / Surface joint

TIG welding parameters in direct current (DC).

2.TIG welding defects – troubleshooting

DEFECT	POSSIBLE CAUSES	REMEDIES
1. The electrode melts when the arc strikes.	A. Electrode connected to the "+" pole.	A. Connect the electrode to the "-" pole.
2. Dirty welding bath.	A. Electrode contaminated from contact with the welding bath or rod. B. Gas contaminated with air.	A. Remake the electrode tip. B. Check the gas hoses or change bottle.
3. The electrode melts or oxidises when the arc strikes.	A. No gas available on the welding bath. B. Torch clogged by impurities. C. Gas hose cut. D. Gas pathway contains impurities. E. Gas valve closed. F. Torch valve closed. G. Electrode too small for current being used.	A. Check for obstacles in the gas lines and check the bottle. B. Clean the torch. C. Replace the gas hoses. D. Detach the gas feed from the torch and increase pressure to blow away impurities. E. Open. F. Open. G. Lower welding current or replace the electrode with a larger one.
4. Welding visibly slight.	A. Inadequate protective gas.	A. Increase the gas flow or check the gas feed line.
5. Arc unstable during TIG welding.	A. Tungsten electrode too big for the welding current.	A. Select the right size electrode. (Reference table 3).
6. The welding arc doesn't stabilize.	A. Earth clamp not connected to the piece, or connectors not connected to the right poles. B. Incorrect gas flow, empty bottle or closed valve.	A. Connect the earth clamp to the weld piece or connect torch cables and earth to the right connectors. B. Correct the gas flow, change bottle or open the valve.
7. The arc doesn't strike smoothly.	A. Tungsten electrode too big for the welding current. B. Tungsten electrode not adequate for the job. C. Gas flow too high. D. Wrong gas being used. E. Poor contact between earth clamp and weld piece.	A. Select the right size electrode. (Reference table 3). B. Select the right type of electrode. (Reference table 4). C. Select the right gas flow for the job. D. Select the right type of gas. (Reference table 6). E. Ensure good contact between earth clamp and weld piece.

WHAT IF THE INVERTER DOESN'T WORK?

- ***The welder doesn't switch-on:*** check the mains connection and the switch position (1).

- ***Irregular electrode welding:***
  Check correct connection of the cable holder and earth clamp according to the electrode being used.
  Check that the welding current is appropriate for the electrode and the piece to be welded.
  Check that the electrodes are not wet or damaged.
  Check that the weld piece is not excessively dirty, greasy, etc.
  Check that the earth clamp is well connected to the weld piece.

- ***The welder doesn't generate the power required:***
  Check that the mains voltage is between 210V-250V (even during welding)
  If extension cables are used, make sure that they conform to the table on page 8.

  - **In TIG welding**

- ***The torch spatters during welding:***
  Check that the torch and earth are correctly connected.
  Check that gas is present and that the flow is sufficient.
  Check that the weld piece is not greasy or dirty.
  Check that the weld piece isn't composed of alloys incompatible with the power source used.
  Check that the electrode is the right colour for the material to be welded.
  Check if too high a current setting is being used.

- ***Duty Cycle too short:***
  Check that the fan is turning.
  Check if the fan is blocked and that air circulates from the air grids.
  Check if the working environment is too hot.

AVAILABLE ACCESSORIES

CODE:	DESCRIPTION:
0000KIT16G	Welding set with clamps and 16 sqmm cables
0000KIT25G	Welding set with clamps and 25 sqmm cables
0000KIT17V4	TIG 17V4 torch, 4 m with manual valve
0000KIT17V8	TIG 17V8 torch, 8 m with manual valve
MISS001200	Grey case
0000KIT16GV	Plastic Suitcase with 16G welding set
0000KIT25GV	Plastic Suitcase with 25G welding set
0123420001	G BOX (adaptor for operating with power generators; already included in the G-PROT model).
0000090390	Welding helmet
00008018-L	Pressure gauge with two manometers
000080RB-F	Pressure gauge with flowmeter
000RID1MAN	Pressure gauge with one manometer
0000019011	Disposable ARGON bottle (110 lt)

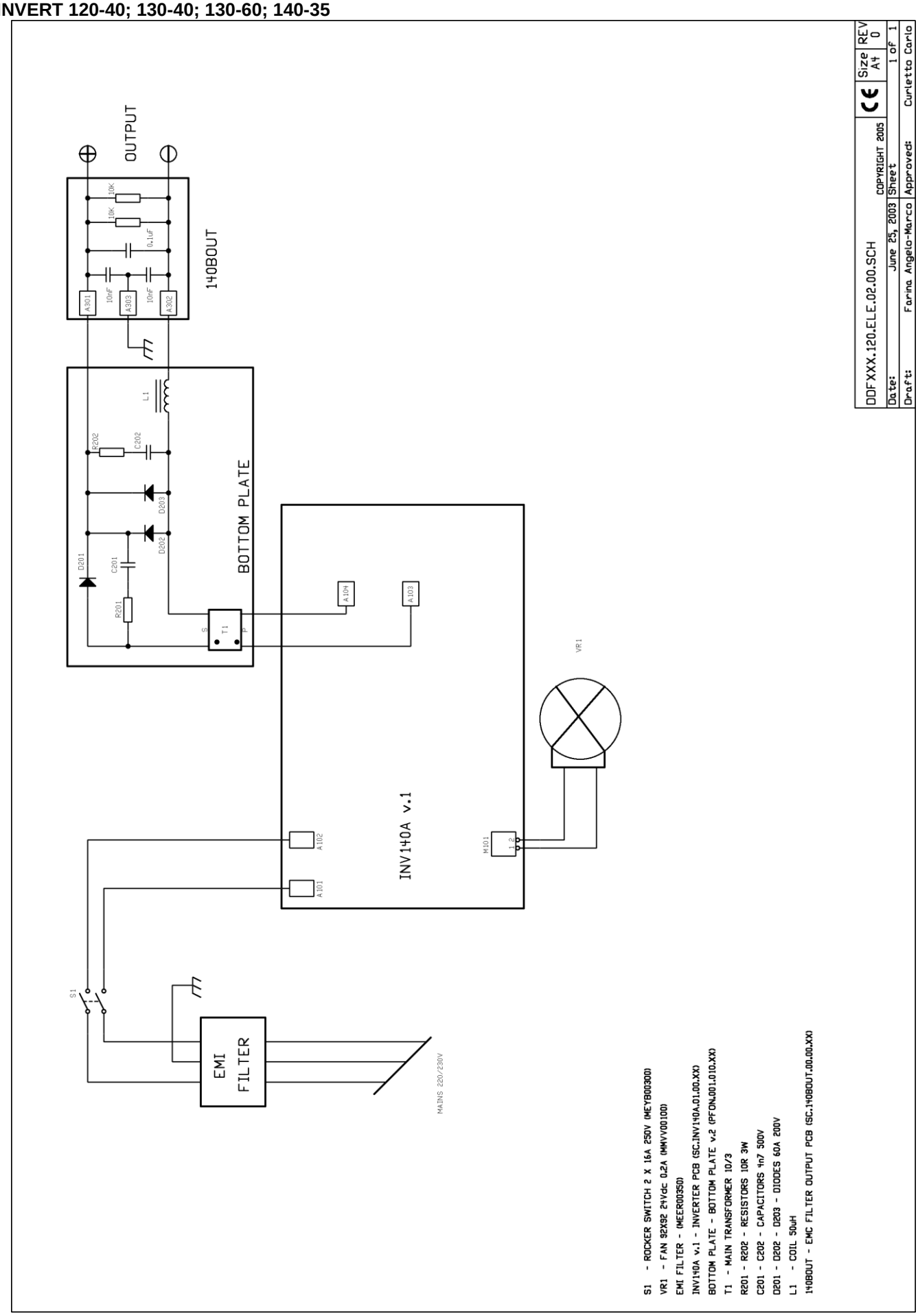
TECHNICAL CHARACTERISTICS

	INVERT 120/40	INVERT 130/40	INVERT 130/60	INVERT 140-35	INVERT 140/50 INVERT 140/50 G-PROT	INVERT 160/50 INVERT 160/50 G-PROT
Mains voltage	230V ±10%	230V ±10%	230V ±10%	230V ±10%	230V ±10%	230V ±10%
Frequency	50/60Hz	50/60Hz	50/60Hz	50/60Hz	50/60Hz	50/60Hz
OCV	95 V	95 V	95 V	95 V	95 V	95 V
Electrode Nominal Power	3,7 KW	4,1 KW	4,1 KW	4,5 KW	4,5 KW	5,3 KW
TIG DC Nominal Power	2,2 KW	2,5 KW	2,5 KW	2,7 KW	2,7 KW	3,3 KW
Electrode arc voltage	20,2 – 24,8 V	20,2 – 25,2 V	20,2 – 25,2 V	20,2 – 25,6 V	20,2 – 25,6 V	20,2 – 26,4 V
TIG arc voltage	10,2 – 14,8 V	10,2 – 15,2 V	10,2 – 15,2 V	10,2 – 15,6 V	10,2 – 15,6 V	10,2 – 16,4 V
Nominal current	19 A	21 A	21 A	23 A	23 A	27 A
Protective Fuses	16 A time-lag	16 A time-lag	16 A time-lag	16 A time-lag	16 A time-lag	16 A time-lag
TIG DC duty cycle	120 A – 50%	130 A – 60%	130 A – 70%	140A - 45%	140 A – 60%	160 A – 60%
TIG DC output at 100% duty cycle	85 A	100 A	110 A	95 A	110 A	125 A
Electrode duty cycle	120 A – 40%	130 A – 40%	130 A – 60%	140A - 35%	140 A – 50%	160 A – 50%
Electrode output at 100% duty cycle	75 A	80 A	100 A	85 A	100 A	110 A
Power factor	0,85	0,85	0,85	0,85	0,85	0,85
Degree of protection	IP 21 S	IP 21 S	IP 21 S	IP 21 S	IP 21 S	IP 21 S
Insulation Class	F	F	F	F	F	F
Working temperature	-10°C+40°C	-10°C+40°C	-10°C+40°C	-10°C+40°C	-10°C+40°C	-10°C+40°C
Size (mm)	250x130x220	250x130x220	250x130x220	250x130x220	285x155x220	285x155x220
Size (in)	9.84x5.11x8.66	9.84x5.11x8.66	9.84x5.11x8.66	9.84x5.11x8.66	11.22x6.10x8.66	11.22x6.10x8.66
Weight	5,25 Kg (11.57 lbs)	5,25 Kg (11.57 lbs)	5,25 Kg (11.57 lbs)	5,25 Kg (11.57 lbs)	6,05 Kg (13.33 lbs)	6,05 Kg (13.33 lbs)
Electrode output range	5 – 120 A	5 – 130 A	5 – 130 A	5-140A	5 – 140 A	5 – 160 A
TIG DC output range	5 – 120 A	5 – 130 A	5 – 130 A	5-140A	5 – 140 A	5 – 160 A
Hot start	Automatic	Automatic	Automatic	Automatic	Automatic	Automatic
Arc force	Automatic	Automatic	Automatic	Automatic	Automatic	Automatic
Antisticking	Automatic	Automatic	Automatic	Automatic	Automatic	Automatic
Type of arc ignition	SCRATCH	SCRATCH	SCRATCH	SCRATCH	SCRATCH	SCRATCH

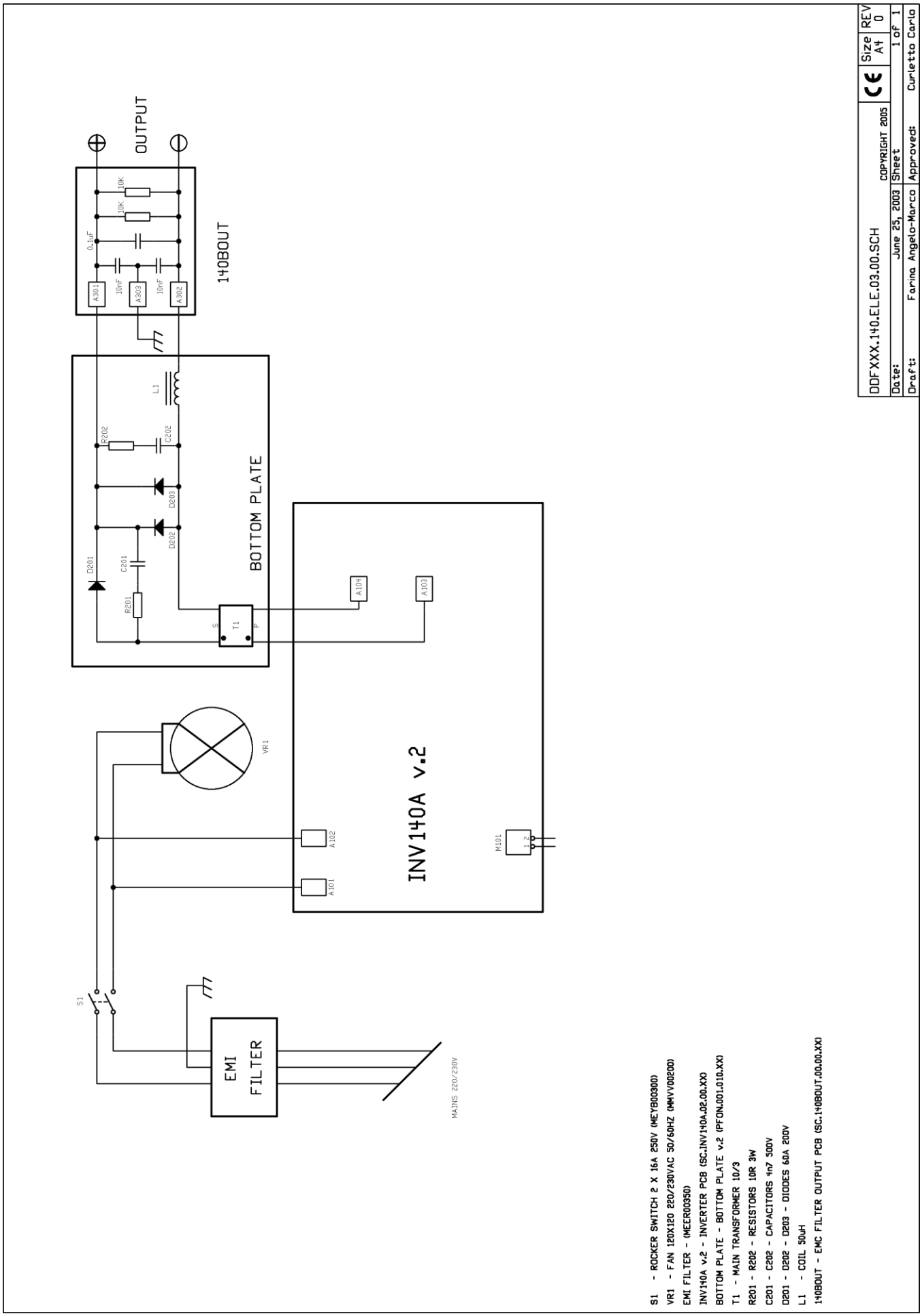
N.B: The manufacturer reserves the right to make changes to product specifications at any time and without notice. The manufacturer is relieved of all liability for improper or incorrect use of its products that could harm persons or things.

BLOCK DIAGRAM

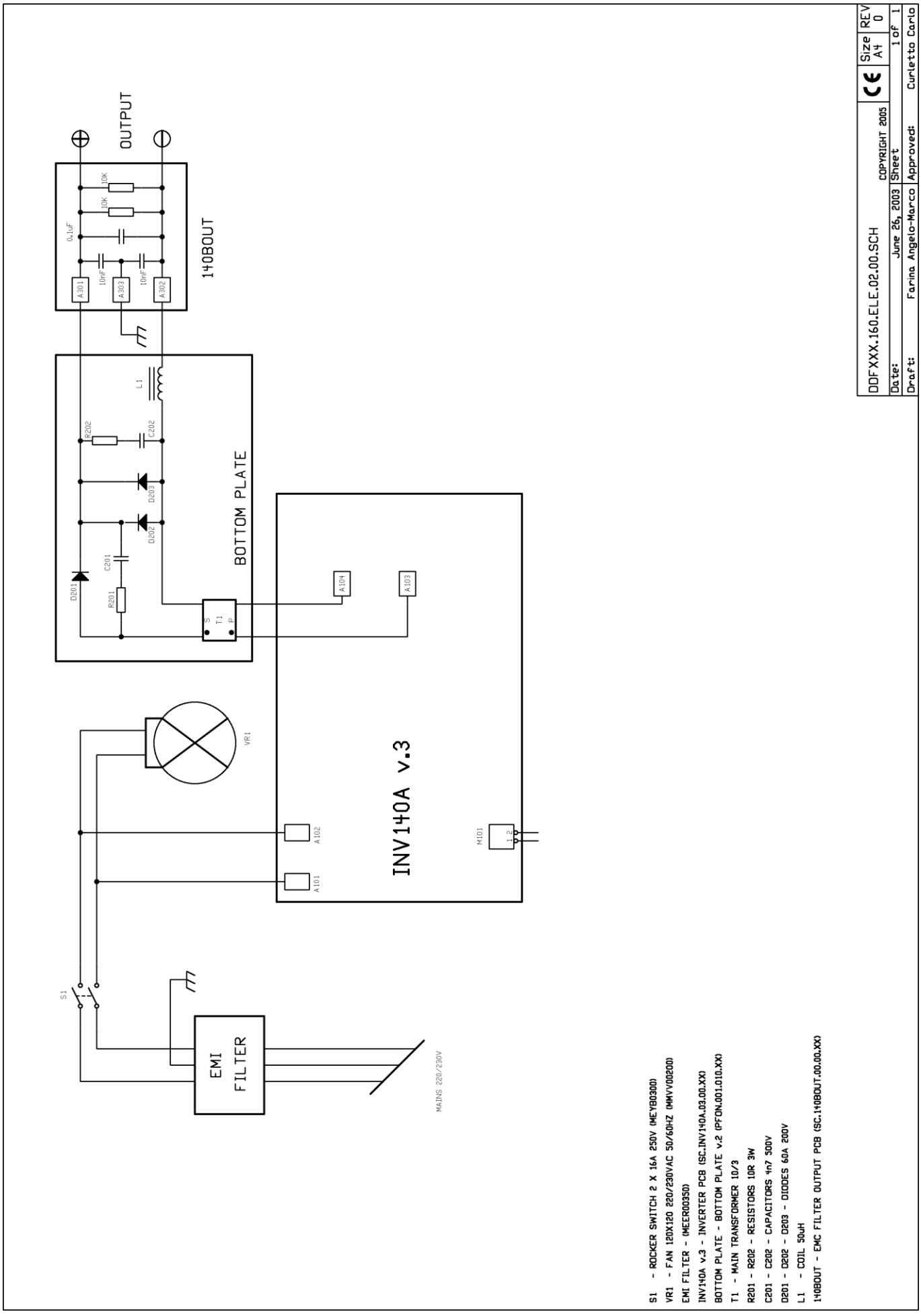
INVERT 120-40; 130-40; 130-60; 140-35



INVERT 140/50 ADV

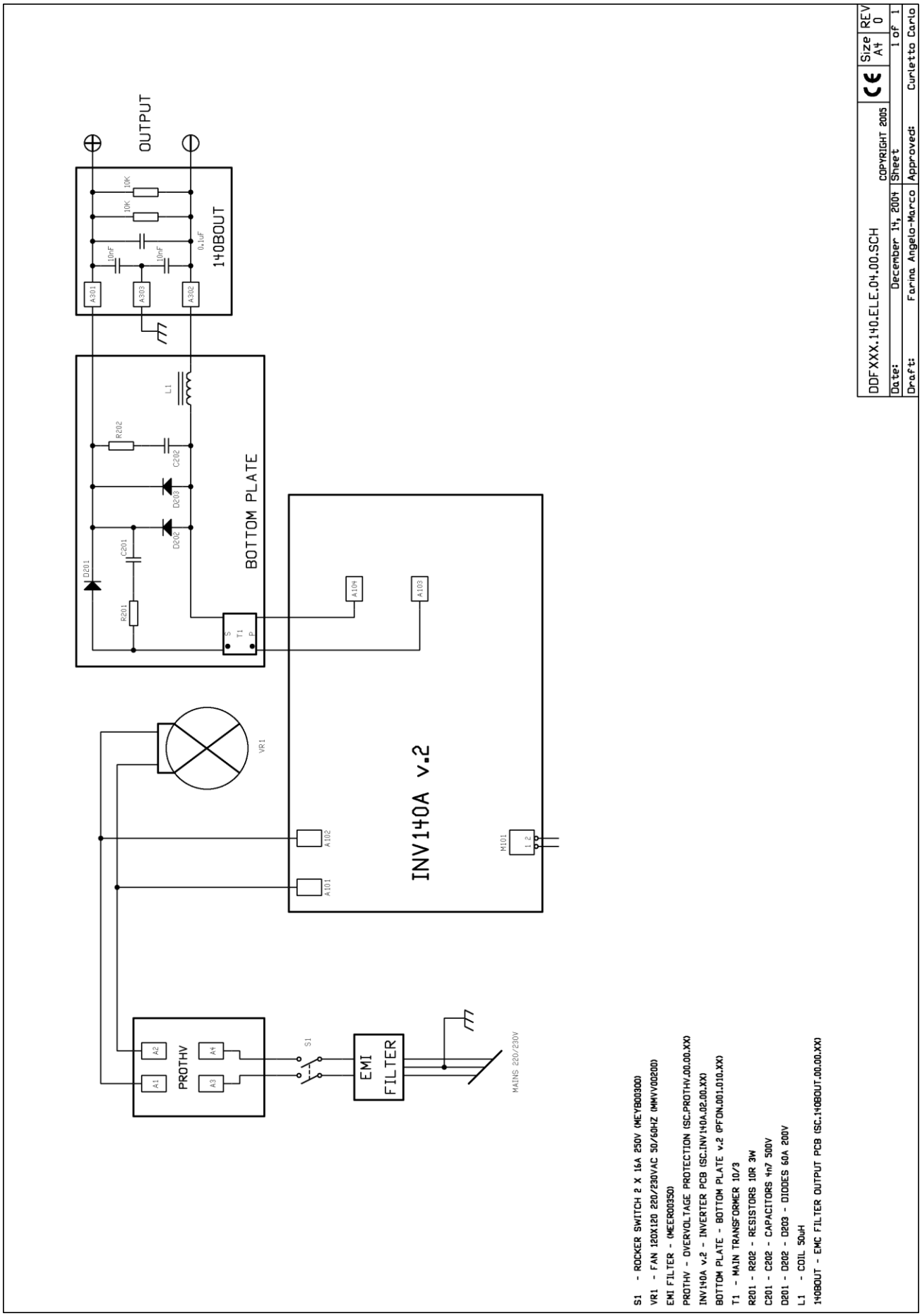


S1 - ROCKER SWITCH 2 X 16A 250V (MEYB00300)
VR1 - FAN 120X120 220/230VAC 50/60HZ (MMVV00200)
EMI FILTER - (MEER00350)
INV140A v.2 - INVERTER PCB (SC.INV140A.02.00.XX)
BOTTOM PLATE - BOTTOM PLATE v.2 (PFON.001.010.XX)
T1 - MAIN TRANSFORMER 10/3
R201 - R202 - RESISTORS 10R 3W
C201 - C202 - CAPACITORS 4n7 500V
D201 - D202 - D203 - DIODES 60A 200V
L1 - COIL 50uH
140BOUT - EMC FILTER OUTPUT PCB (SC.140BOUT.00.00.XX)

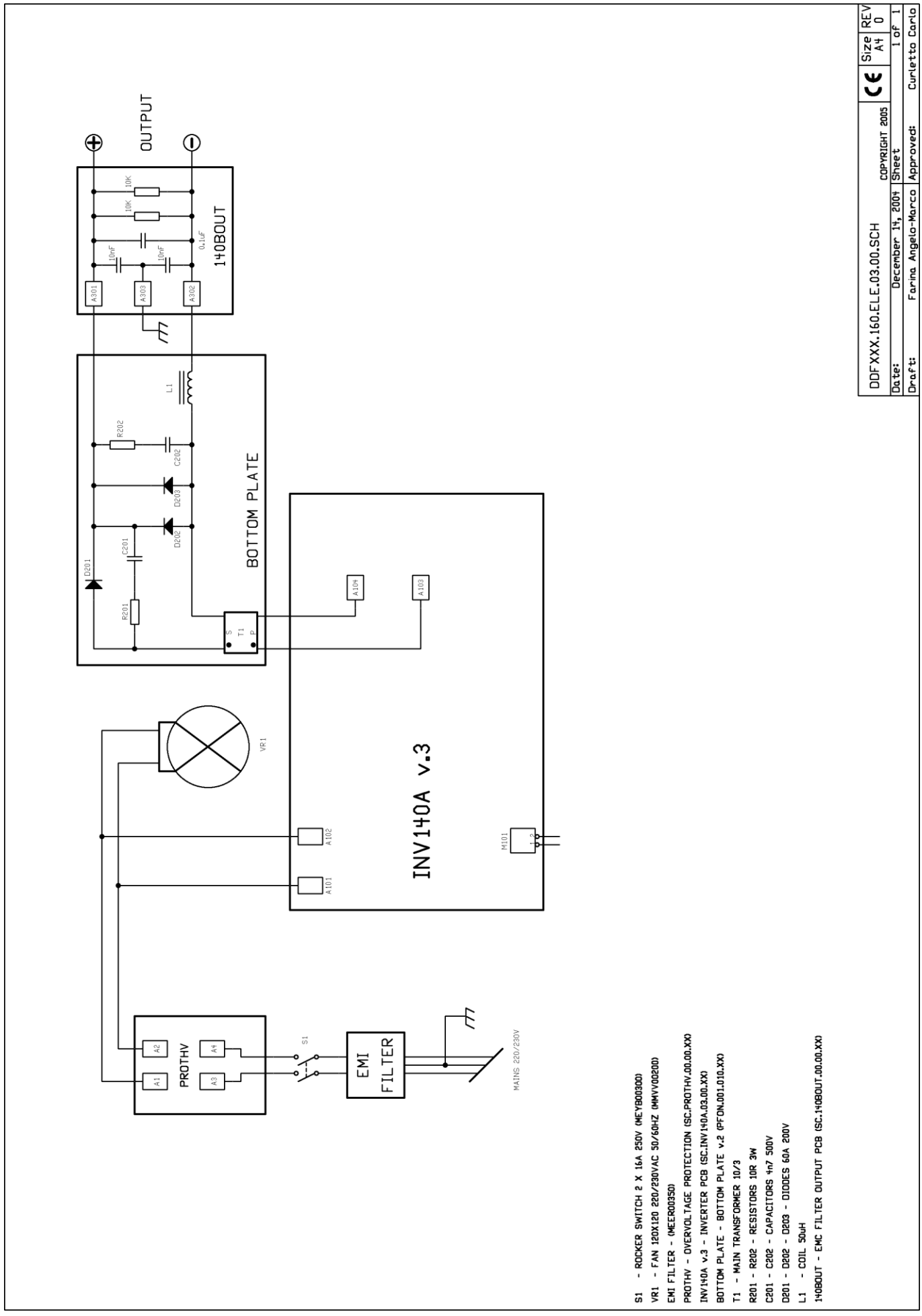


S1 - ROCKER SWITCH 2 X 16A 250V (MEYB0300)
VR1 - FAN 120X120 220/230VAC 50/60HZ (MMVV0020D)
EMI FILTER - (MEER00350)
INV140A v.3 - INVERTER PCB (SC.INV140A.03.00.XX)
BOTTOM PLATE - BOTTOM PLATE v.2 (PFON.001.010.XX)
T1 - MAIN TRANSFORMER 10/3
R201 - R202 - RESISTORS 10R 3W
C201 - C202 - CAPACITORS 4n7 500V
D201 - D202 - D203 - DIODES 60A 200V
L1 - COIL 50uH
140BOUT - EMC FILTER OUTPUT PCB (SC.140BOUT.00.00.XX)

INVERT 140/50 ADV G-PROT



INVERT 160/50 ADV G-PROT



SPARE PARTS LIST

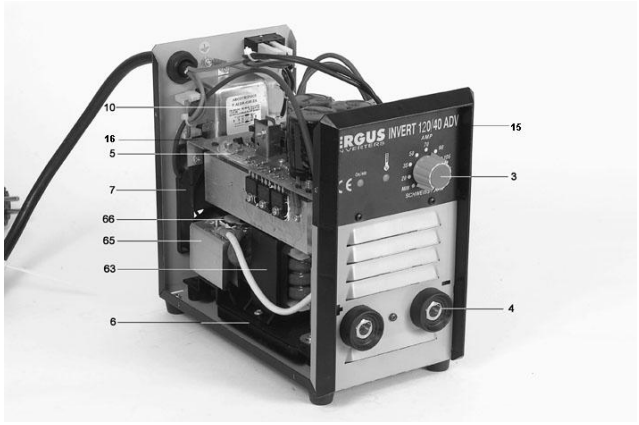
INVERT 120/40 ADV			
Nr.	TEC.LA Code	Descrizione	Description
1	**DDF115.120.ELE.02.00**	**INVERT 120/40 ADV**	**INVERT 120/40 ADV**
2	Y.DD.COPE.115.01.00	COPERCHIO CON MANIGLIA	COVER WITH HANDLE
3	Y.DD.MANO.438.01.00	MANOPOLA ∅ 22 COMPLETA	KNOB ∅ 22
4	MMCD00100	DINSE 25	CONNECTOR DINSE 25
5	SC.INV140A.01.00.00	INVERTER –GRUPPO DI POTENZA	POWER INVERTER
6	PFON.001.010.00	PIASTRA DI FONDO	BOTTOM PLATE
7	MMVV00100	VENTILATORE	FAN
8	MMTVG00300	PROTEGGIDITA	FAN GRID
9	CAVO.001.002.00	CAVO ALIMENTAZIONE	MAINS POWER CABLE W/PLUG
10	MEER00350	FILTRO EMI	EMI FILTER
11	MEYB00300	INTERRUTTORE	ON/OFF SWITCH
12	MISS00500	SCATOLA CARTONE	CARDBOARD BOX
13	SC.100ASMT.00.00.00	LOGICA DI POTENZA	POWER LOGICS PCB*
14	MERPD100K	POTENZIOMETRO	POTENTIOMETRE
15	MMAG00300	CORNICE PLASTICA	PLASTIC FRAME
16	CARP.023.016.00	SQUADRETTA DI SOSTEGNO	ANGLE HOLDER
6	**PFON.001.010.00**	**PIASTRA DI FONDO**	**BOTTOM PLATE**
61	MMSD00200	SUPPORTO PLASTICA PER PIASTRA BONSAI	PLASTIC PLATE
62	Y.DD.INDU.438.01.00	INDUTTANZA PIASTRA STICK BONSAI	INDUCTANCE
63	Y.DD.TRAS.438.01.00	TRASFORMATORE	TRANSFORMER LITZ
65	Y.DD.DISS.438.01.00	MODULO DISSIPATORE DIODI	HEAT DISSIPATOR W/DIODES
66		DIODO BYV52-200	OUTPUT DIODE

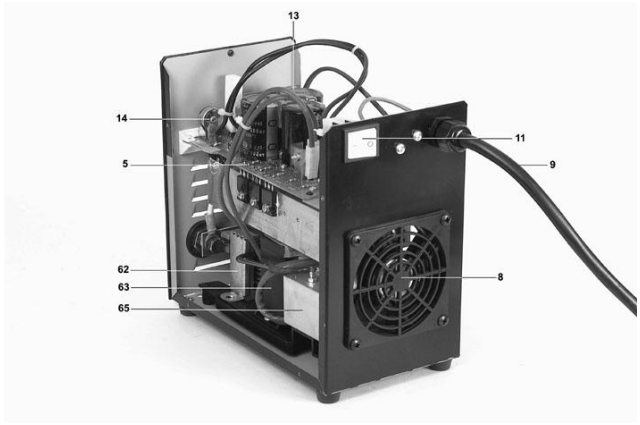
*Please always mention the type of machine.

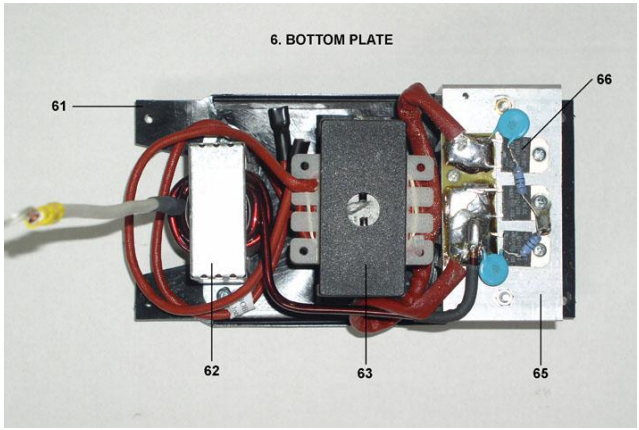
INVERT 130/40 ADV			
Nr.	TEC.LA Code	Descrizione	Description
1	**DDF115.130.ELE.04.00**	**INVERT 130/40 ADV**	**INVERT 130/40 ADV**
2	Y.DD.COPE.115.01.00	COPERCHIO CON MANIGLIA	COVER WITH HANDLE
3	Y.DD.MANO.438.01.00	MANOPOLA ∅ 22 COMPLETA	KNOB ∅ 22
4	MMCD00100	DINSE 25	CONNECTOR DINSE 25
5	SC.INV140A.01.00.00	INVERTER –GRUPPO DI POTENZA	POWER INVERTER
6	PFON.001.010.00	PIASTRA DI FONDO	BOTTOM PLATE
7	MMVV00100	VENTILATORE	FAN
8	MMTVG00300	PROTEGGIDITA	FAN GRID
9	CAVO.001.002.00	CAVO ALIMENTAZIONE	MAINS POWER CABLE W/PLUG
10	MEER00350	FILTRO EMI	EMI FILTER
11	MEYB00300	INTERRUTTORE	ON/OFF SWITCH
12	MISS00500	SCATOLA CARTONE	CARDBOARD BOX
13	SC.100ASMT.00.00.00	LOGICA DI POTENZA	POWER LOGICS PCB*
14	MERPD100K	POTENZIOMETRO	POTENTIOMETRE
15	MMAG00300	CORNICE PLASTICA	PLASTIC FRAME
16	CARP.023.016.00	SQUADRETTA DI SOSTEGNO	ANGLE HOLDER
6	**PFON.001.010.00**	**PIASTRA DI FONDO**	**BOTTOM PLATE**
61	MMSD00200	SUPPORTO PLASTICA PER PIASTRA BONSAI	PLASTIC PLATE
62	Y.DD.INDU.438.01.00	INDUTTANZA PIASTRA STICK BONSAI	INDUCTANCE
63	Y.DD.TRAS.438.01.00	TRASFORMATORE	TRANSFORMER LITZ
65	Y.DD.DISS.438.01.00	MODULO DISSIPATORE DIODI	HEAT DISSIPATOR W/DIODES
66		DIODO BYV52-200	OUTPUT DIODE

*Please always mention the type of machine.

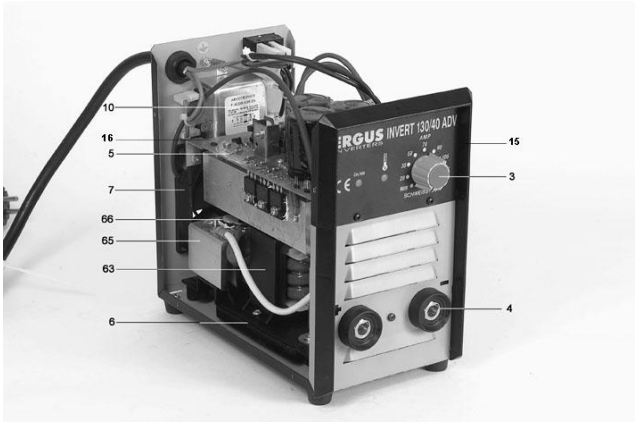
INVERT 120/40 ADV

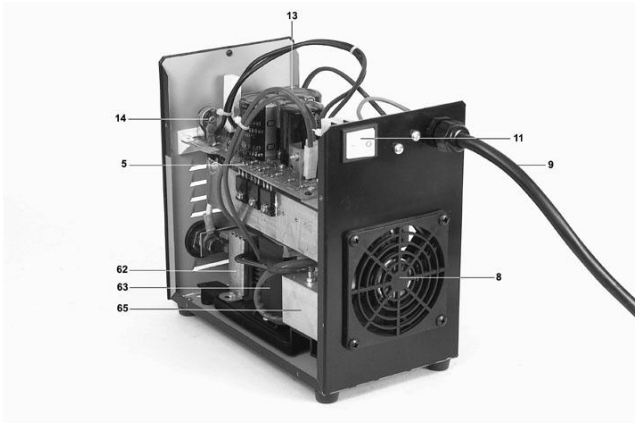


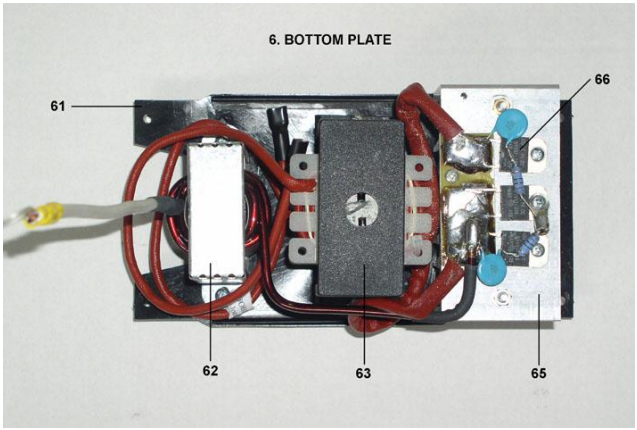




INVERT 130/40 ADV







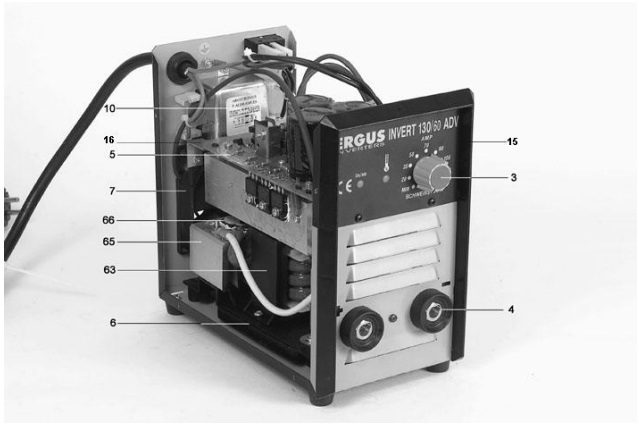
INVERT 130/60 ADV			
Nr.	TEC.LA Code	Descrizione	Description
1	**DDF115.130.ELE.05.00**	**INVERT 130/60 ADV**	**INVERT 130/60 ADV**
2	Y.DD.COPE.115.01.00	COPERCHIO CON MANIGLIA	COVER WITH HANDLE
3	Y.DD.MANO.438.01.00	MANOPOLA ∅ 22 COMPLETA	KNOB ∅ 22
4	MMCD00100	DINSE 25	CONNECTOR DINSE 25
5	SC.INV140A.01.00.00	INVERTER –GRUPPO DI POTENZA	POWER INVERTER
6	PFON.001.010.00	PIASTRA DI FONDO	BOTTOM PLATE
7	MMVV00100	VENTILATORE	FAN
8	MMTVG00300	PROTEGGIDITA	FAN GRID
9	CAVO.001.002.00	CAVO ALIMENTAZIONE	MAINS POWER CABLE W/PLUG
10	MEER00350	FILTRO EMI	EMI FILTER
11	MEYB00300	INTERRUTTORE	ON/OFF SWITCH
12	MISS00500	SCATOLA CARTONE	CARDBOARD BOX
13	SC.100ASMT.00.00.00	LOGICA DI POTENZA	POWER LOGICS PCB*
14	MERPD100K	POTENZIOMETRO	POTENTIOMETRE
15	MMAG00300	CORNICE PLASTICA	PLASTIC FRAME
16	CARP.023.016.00	SQUADRETTA DI SOSTEGNO	ANGLE HOLDER
6	**PFON.001.010.00**	**PIASTRA DI FONDO**	**BOTTOM PLATE**
61	MMSD00200	SUPPORTO PLASTICA PER PIASTRA BONSAI	PLASTIC PLATE
62	Y.DD.INDU.438.01.00	INDUTTANZA PIASTRA STICK BONSAI	INDUCTANCE
63	Y.DD.TRAS.438.01.00	TRASFORMATORE	TRANSFORMER LITZ
65	Y.DD.DISS.438.01.00	MODULO DISSIPATORE DIODI	HEAT DISSIPATOR W/DIODES
66		DIODO BYV52-200	OUTPUT DIODE

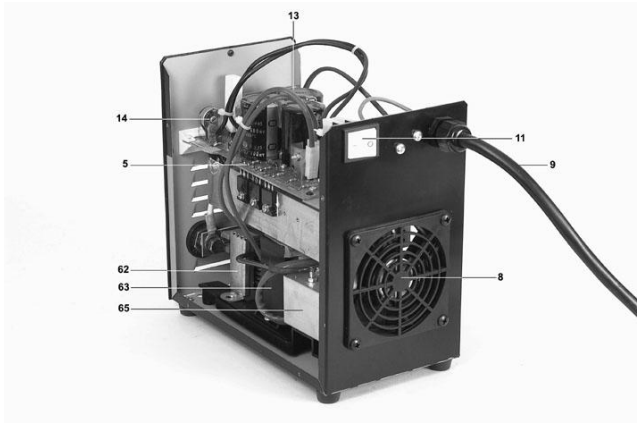
*Please always mention the type of machine.

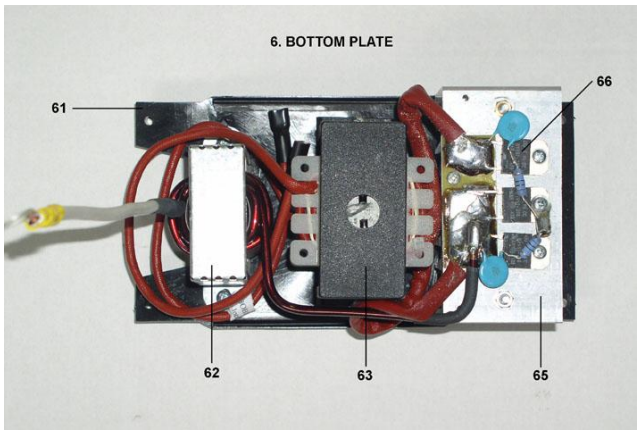
INVERT 140/35 ADV			
Nr.	TEC.LA Code	Descrizione	Description
1	**DDF115.140.ELE.02.00**	**INVERT 140/35 ADV**	**INVERT 140/35 ADV**
2	Y.DD.COPE.115.01.00	COPERCHIO CON MANIGLIA	COVER WITH HANDLE
3	Y.DD.MANO.438.01.00	MANOPOLA ∅ 22 COMPLETA	KNOB ∅ 22
4	MMCD00100	DINSE 25	CONNECTOR DINSE 25
5	SC.INV140A.01.00.00	INVERTER –GRUPPO DI POTENZA	POWER INVERTER
6	PFON.001.010.00	PIASTRA DI FONDO	BOTTOM PLATE
7	MMVV00100	VENTILATORE	FAN
8	MMTVG00300	PROTEGGIDITA	FAN GRID
9	CAVO.001.002.00	CAVO ALIMENTAZIONE	MAINS POWER CABLE W/PLUG
10	MEER00350	FILTRO EMI	EMI FILTER
11	MEYB00300	INTERRUTTORE	ON/OFF SWITCH
12	MISS00500	SCATOLA CARTONE	CARDBOARD BOX
13	SC.100ASMT.00.00.00	LOGICA DI POTENZA	POWER LOGICS PCB*
14	MERPD100K	POTENZIOMETRO	POTENTIOMETRE
15	MMAG00300	CORNICE PLASTICA	PLASTIC FRAME
16	CARP.023.016.00	SQUADRETTA DI SOSTEGNO	ANGLE HOLDER
6	**PFON.001.010.00**	**PIASTRA DI FONDO**	**BOTTOM PLATE**
61	MMSD00200	SUPPORTO PLASTICA PER PIASTRA BONSAI	PLASTIC PLATE
62	Y.DD.INDU.438.01.00	INDUTTANZA PIASTRA STICK BONSAI	INDUCTANCE
63	Y.DD.TRAS.438.01.00	TRASFORMATORE	TRANSFORMER LITZ
65	Y.DD.DISS.438.01.00	MODULO DISSIPATORE DIODI	HEAT DISSIPATOR W/DIODES
66		DIODO BYV52-200	OUTPUT DIODE

*Please always mention the type of machine.

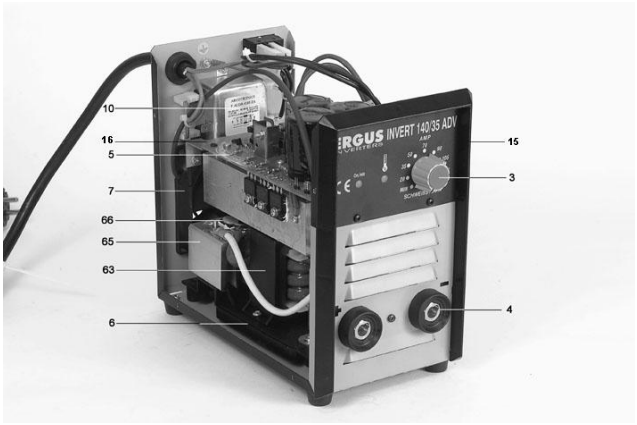
INVERT 130/60 ADV

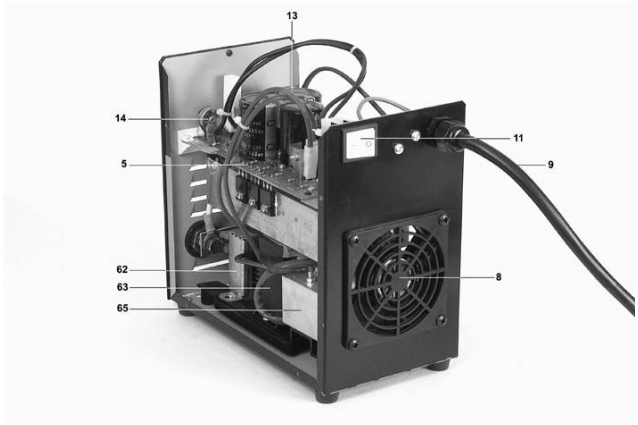


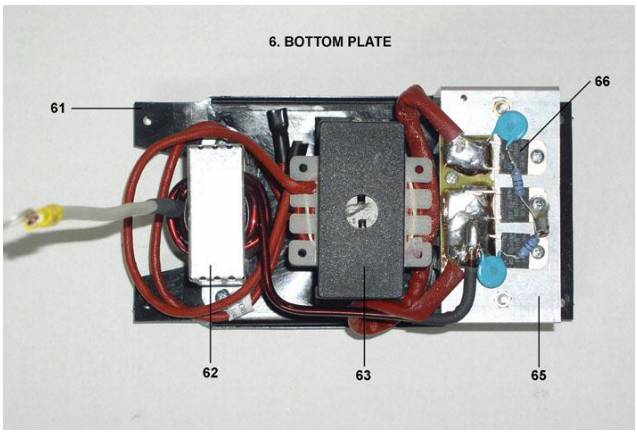




INVERT 140/35 ADV







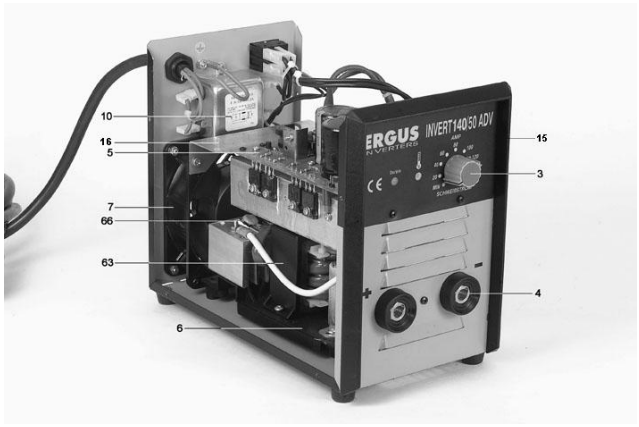
INVERT 140/50 ADV			
Nr.	TEC.LA Code	Descrizione	Description
1	**DDF115.140.ELE.03.00**	**INVERT 140/50 ADV**	**INVERT 140/50 ADV**
2	Y.DD.COPE.115.02.00	COPERCHIO CON MANIGLIA	COVER WITH HANDLE
3	Y.DD.MANO.438.01.00	MANOPOLA ∅ 22 COMPLETA	KNOB ∅ 22
4	MMCD00100	DINSE 25	CONNECTOR DINSE 25
5	SC.INV140A.02.00.00	INVERTER –GRUPPO DI POTENZA	POWER INVERTER
6	PFON.001.010.00	PIASTRA DI FONDO	BOTTOM PLATE
7	MMVV00200	VENTILATORE	FAN
8	MMTVG00250	PROTEGGIDITA	FAN GRID
9	CAVO.001.002.00	CAVO ALIMENTAZIONE	MAINS POWER CABLE W/PLUG
10	MEER00350	FILTRO EMI	EMI FILTER
11	MEYB00300	INTERRUTTORE	ON/OFF SWITCH
12	MISS00600	SCATOLA CARTONE	CARDBOARD
13	SC.100ASMT.00.00.00	LOGICA DI POTENZA	POWER LOGICS PCB*
14	MERPD100K	POTENZIOMETRO	POTENTIOMETRE
16	CARP.024.016.00	SQUADRETTA DI SOSTEGNO	ANGLE HOLDER
15	MMAG00400	CORNICE PLASTICA	PLASTIC FRAME
6	**PFON.001.010.00**	**PIASTRA DI FONDO**	**BOTTOM PLATE**
61	MMSD00200	SUPPORTO PIASTRA PER PIASTRA	PLASTIC PLATE
62	Y.DD.INDU.438.01.00	INDUTTANZA	INDUCTANCE
63	Y.DD.TRAS.438.01.00	TRASFORMATORE	TRANSFORMER
65	Y.DD.DISS.438.01.00	MODULO DISSIPATORE DIODI	HEAT DISSIPATOR W/DIODES
66		DIODO DI USCITA	OUTPUT DIODE

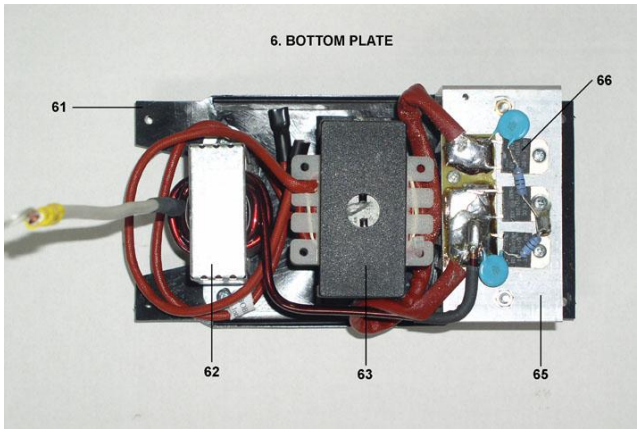
*Please always mention the type of machine.

INVERT 140/50 G-PROT			
Nr.	TEC.LA Code	Descrizione	Description
1	**DDF115.140.ELE.04.00**	**INVERT 140/50 ADV CON PROTEZIONE**	**INVERT 140/50 ADV WITH PROTECTION**
2	Y.DD.COPE.115.02.00	COPERCHIO CON MANIGLIA	COVER WITH HANDLE
3	Y.DD.MANO.438.01.00	MANOPOLA ∅ 22 COMPLETA	KNOB ∅ 22
4	MMCD00100	DINSE 25	CONNECTOR DINSE 25
5	SC.INV140A.02.00.00	INVERTER –GRUPPO DI POTENZA	POWER INVERTER
6	PFON.001.010.00	PIASTRA DI FONDO	BOTTOM PLATE
7	MMVV00200	VENTILATORE	FAN
8	MMTVG00250	PROTEGGIDITA	FAN GRID
9	CAVO.001.002.00	CAVO ALIMENTAZIONE	MAINS POWER CABLE W/PLUG
10	MEER00350	FILTRO EMI	EMI FILTER
11	MEYB00300	INTERRUTTORE	ON/OFF SWITCH
12	MISS00600	SCATOLA CARTONE	CARDBOARD
13	SC.100ASMT.00.00.00	LOGICA DI POTENZA	POWER LOGICS PCB*
14	MERPD100K	POTENZIOMETRO	POTENTIOMETRE
16	CARP.024.016.00	SQUADRETTA DI SOSTEGNO	ANGLE HOLDER
15	MMAG00400	CORNICE PLASTICA	PLASTIC FRAME
17	SC.PROTHV.00.00.00	SCHEDA PROTEZIONE	HIGHT VOLTAGE PROTECTION PCB
6	**PFON.001.010.00**	**PIASTRA DI FONDO**	**BOTTOM PLATE**
61	MMSD00200	SUPPORTO PIASTRA PER PIASTRA	PLASTIC PLATE
62	Y.DD.INDU.438.01.00	INDUTTANZA	INDUCTANCE
63	Y.DD.TRAS.438.01.00	TRASFORMATORE	TRANSFORMER
65	Y.DD.DISS.438.01.00	MODULO DISSIPATORE DIODI	HEAT DISSIPATOR W/DIODES
66		DIODO DI USCITA	OUTPUT DIODE

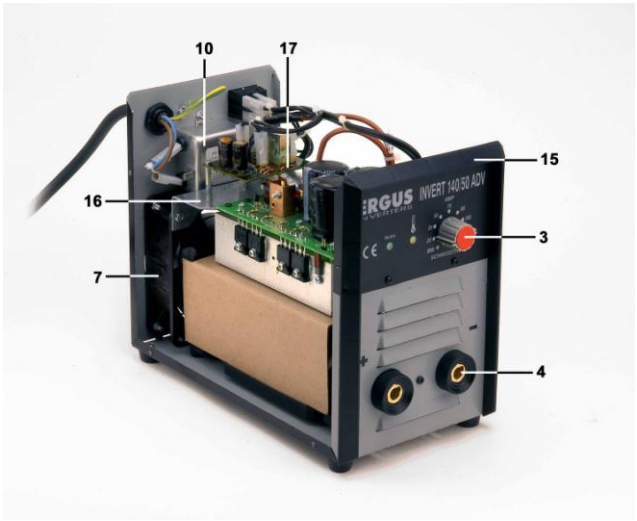
*Please always mention the type of machine.

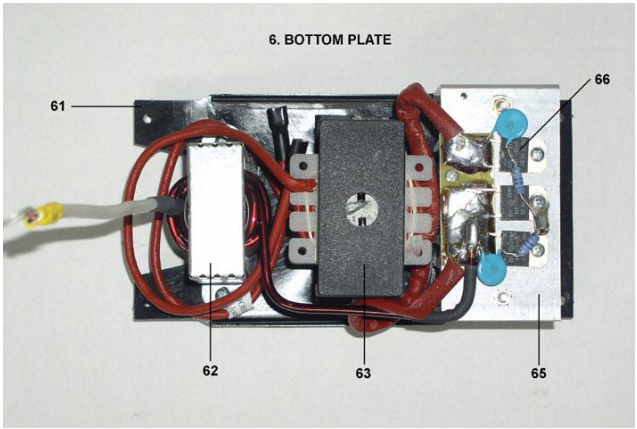
INVERT 140/50 ADV





INVERT 140/50 ADV G-PROT





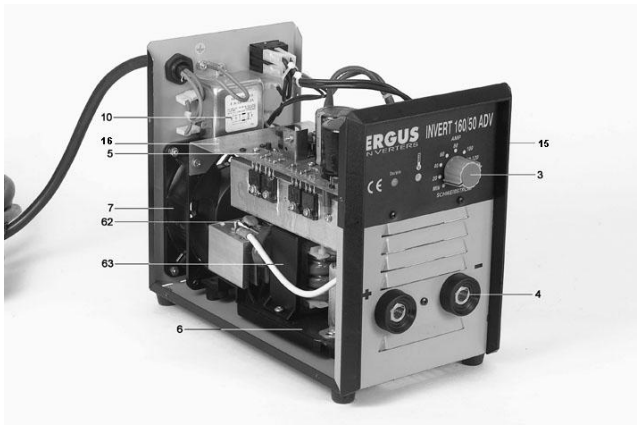
INVERT 160/50 ADV			
Nr.	TEC.LA Code	Descrizione	Description
1	**DDF115.160.ELE.02.00**	**INVERT 160/50 ADV**	**INVERT 160/50 ADV**
2	Y.DD.COPE.115.02.00	COPERCHIO CON MANIGLIA	COVER WITH HANDLE
3	Y.DD.MANO.438.01.00	MANOPOLA ∅ 22 COMPLETA	KNOB ∅ 22
4	MMCD00100	DINSE 25	CONNECTOR DINSE 25
5	SC.INV140A.03.00.00	INVERTER –GRUPPO DI POTENZA	POWER INVERTER
6	PFON.001.010.00	PIASTRA DI FONDO	BOTTOM PLATE
7	MMVV00200	VENTILATORE	FAN
8	MMTVG00250	PROTEGGIDITA	FAN GRID
9	CAVO.001.002.00	CAVO ALIMENTAZIONE	MAINS POWER CABLE W/PLUG
10	MEER00350	FILTRO EMI	EMI FILTER
11	MEYB00300	INTERRUTTORE	ON/OFF SWITCH
12	MISS00600	SCATOLA CARTONE	CARDBOARD
13	SC.100ASMT.00.00.00	LOGICA DI POTENZA	POWER LOGICS PCB*
14	MERPD100K	POTENZIOMETRO	POTENTIOMETRE
16	CARP.024.016.00	SQUADRETTA DI SOSTEGNO	ANGLE HOLDER
15	MMAG00400	CORNICE PLASTICA	PLASTIC FRAME
6	**PFON.001.010.00**	**PIASTRA DI FONDO**	**BOTTOM PLATE**
61	MMSD00200	SUPPORTO PLASTICA PER PIASTRA	PLASTIC PLATE
62	Y.DD.INDU.438.01.00	INDUTTANZA	INDUCTANCE
63	Y.DD.TRAS.438.01.00	TRASFORMATORE	TRANSFORMER
65	Y.DD.DISS.438.01.00	MODULO DISSIPATORE DIODI	HEAT DISSIPATOR W/DIODES
66		DIODO DI USCITA	OUTPUT DIODE

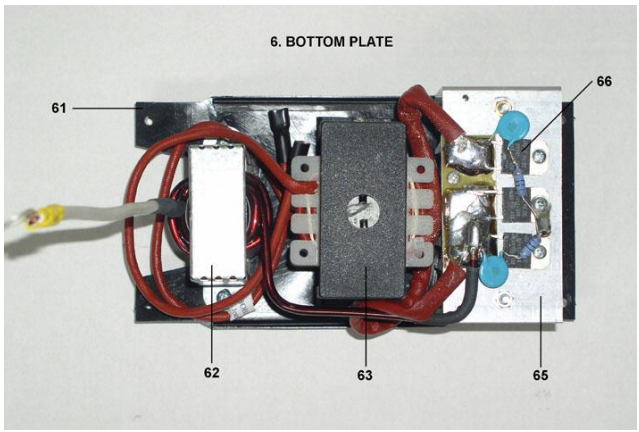
*Please always mention the type of machine.

INVERT 160/50 G-PROT			
Nr.	TEC.LA Code	Descrizione	Description
1	**DDF115.160.ELE.03.00**	**INVERT 160/50 ADV CON PROTEZIONE**	**INVERT 160/50 ADV WITH PROTECTION**
2	Y.DD.COPE.115.02.00	COPERCHIO CON MANIGLIA	COVER WITH HANDLE
3	Y.DD.MANO.438.01.00	MANOPOLA ∅ 22 COMPLETA	KNOB ∅ 22
4	MMCD00100	DINSE 25	CONNECTOR DINSE 25
5	SC.INV140A.03.00.00	INVERTER –GRUPPO DI POTENZA	POWER INVERTER
6	PFON.001.010.00	PIASTRA DI FONDO	BOTTOM PLATE
7	MMVV00200	VENTILATORE	FAN
8	MMTVG00250	PROTEGGIDITA	FAN GRID
9	CAVO.001.002.00	CAVO ALIMENTAZIONE	MAINS POWER CABLE W/PLUG
10	MEER00350	FILTRO EMI	EMI FILTER
11	MEYB00300	INTERRUTTORE	ON/OFF SWITCH
12	MISS00600	SCATOLA CARTONE	CARDBOARD
13	SC.100ASMT.00.00.00	LOGICA DI POTENZA	POWER LOGICS PCB*
14	MERPD100K	POTENZIOMETRO	POTENTIOMETRE
16	CARP.024.016.00	SQUADRETTA DI SOSTEGNO	ANGLE HOLDER
15	MMAG00400	CORNICE PLASTICA	PLASTIC FRAME
17	SC.PROTHV.00.00.00	SCHEDA PROTEZIONE	HIGHT VOLTAGE PROTECTION PCB
6	**PFON.001.010.00**	**PIASTRA DI FONDO**	**BOTTOM PLATE**
61	MMSD00200	SUPPORTO PLASTICA PER PIASTRA	PLASTIC PLATE
62	Y.DD.INDU.438.01.00	INDUTTANZA	INDUCTANCE
63	Y.DD.TRAS.438.01.00	TRASFORMATORE	TRANSFORMER
65	Y.DD.DISS.438.01.00	MODULO DISSIPATORE DIODI	HEAT DISSIPATOR W/DIODES
66		DIODO DI USCITA	OUTPUT DIODE

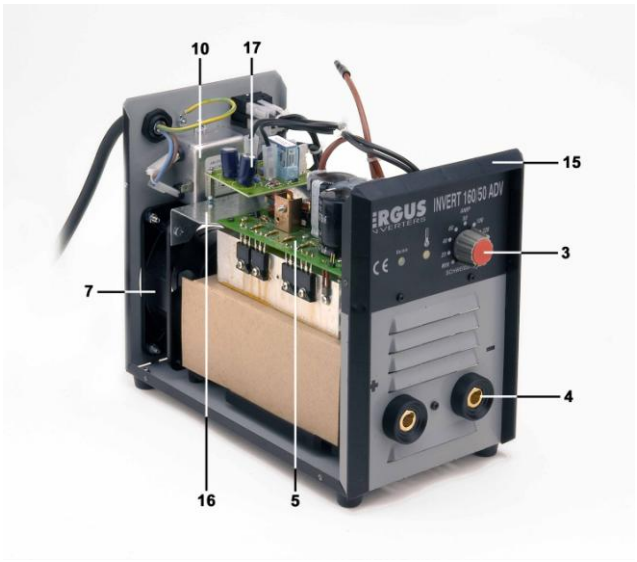
*Please always mention the type of machine.

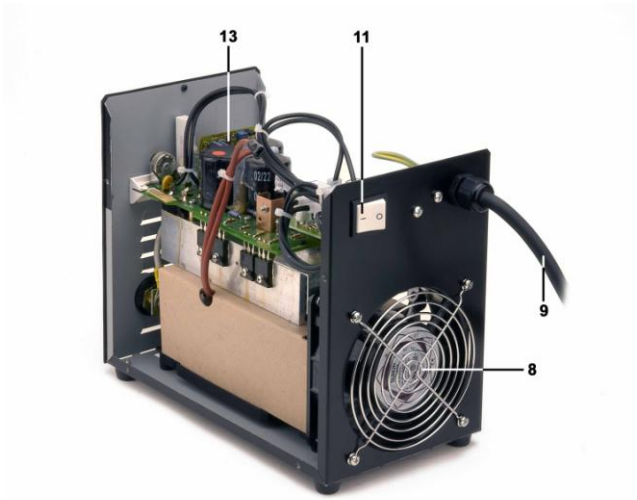
INVERT 160/50 ADV

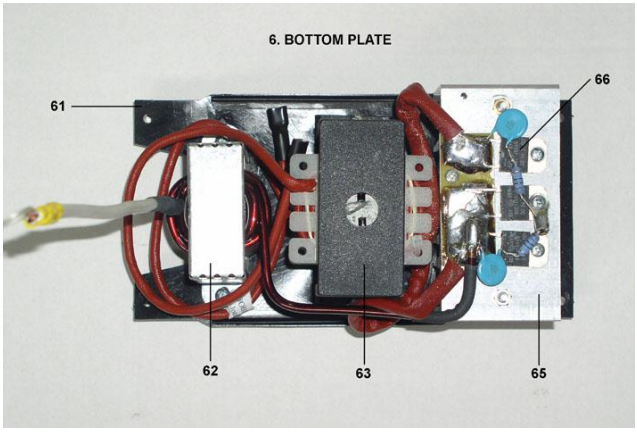




INVERT 160/50 ADV G-PROT







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